

CLAIMS:

1. An electronic device comprising:
 - at least one semiconductor device provided, on a side, with a plurality of bond pads; and
 - a carrier substrate comprising a layer of electrically insulating material and
- 5 having a first side and an opposed second side, which are each provided with an electrically conductive layer, on which first side bond pads are present which are suitable for coupling to the bond pads of the integrated circuit, and on which second side contact pads for external coupling are provided, the contact pads and the bond pads being electrically interconnected according to a desired pattern, a first portion of the contact pads being defined for ground
- 10 connection, a second portion of the contact pads being defined for voltage supply connection and a third portion of the contact pads being defined for signal transmission, in which electronic device
 - the at least one semiconductor device is provided with core functionality and peripheral functionality, the core functionality and the peripheral functionality each being
- 15 provided with voltage supply connection and ground connection,
 - the carrier substrate is laterally subdivided into a core area and a peripheral area, in which core area the contact pads for the core functionality are provided and in which peripheral area the contact pads for the peripheral functionality are provided, wherein
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 - the carrier substrate comprises at least one interconnect for interconnecting the ground connections of the peripheral functionality and the core functionality, and
 - means for decoupling the voltage supply of core and peripheral functionality to the common ground are present.
- 25 2. An electronic device as claimed in claim 1, wherein
 - the peripheral area is located around the core area;
 - a ground plane is defined in the peripheral area on the second side of the carrier substrate, which ground plane is the interconnect for mutually interconnecting the ground connections of the peripheral functionality and the core functionality, and

- interconnects between the contact pads and the bond pads of the peripheral functionality are defined on the first side of the carrier substrate, which interconnects have a transmission line character
- 5 3. An electronic device as claimed in claim 1 or 2, wherein the means for decoupling comprise a decoupling capacitor in the peripheral functionality, which is located either in the at least one semiconductor device or at the carrier substrate.
- 10 4. An electronic device as claimed in claim 2, wherein the contact pads in the core area are defined in an array, the pads for ground connection and for supply connection being arranged in the array such that each of the pads for ground connection has pads for supply connections as the closest neighbor pads.
- 15 5. An electronic device as claimed in claim 2, wherein the contact pads in the peripheral area are defined in subgroups, each subgroup comprising one contact pad for voltage connection or one contact pad for ground connection, and several contact pads for signal transmission, all of the pads for signal transmission having the contact pad for either voltage or ground connection as a neighboring pad.
- 20 6. An electronic device as claimed in claim 2 or 4, wherein the ground plane is defined, in the core area, on the first side of the carrier substrate and is coupled to the ground plane in the peripheral area through vertical interconnects.
- 25 7. An electronic device as claimed in claim 1 or 2, wherein a stiffening layer is present on the first side of the carrier substrate, thereby covering part of the electrically conductive layer
- 30 8. An electronic device as claimed in claim 1 or 7, wherein the semiconductor device is placed on the carrier substrate in a flip chip orientation, the bond pads at the semiconductor device and on the first side of the carrier substrate being positioned in a corresponding configuration, and wherein a heat spreading layer is provided on the first side of the carrier substrate and on a side of the semiconductor device facing away from the side of the bond pads.

9. An electronic device as claimed in claim 1, further provided with a supply series inductor.

10. A carrier substrate of dielectric material for a semiconductor device, having a first side and an opposed second side, with on each side an electrically conductive layer, on which first side bond pads are present suitable for coupling to bond pads of the semiconductor device, and on which second side contact pads for external coupling are provided, the contact pads and the bond pads being electrically interconnected according to a desired pattern, a first portion of the contact pads being defined for ground connection, a second portion of the contact pads being defined for voltage supply connection and a third portion of the contact pads being defined for signal transmission, wherein

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- the carrier substrate is laterally subdivided into a core area and a peripheral area, in which core area the contact pads for core functionality of the integrated circuit are provided and in which peripheral area the contact pads for peripheral functionality of the integrated circuit are provided, the core functionality and the peripheral functionality each being provided with voltage supply connection and ground connection, and
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- the carrier substrate is provided with at least one interconnect for interconnecting the ground connections of the peripheral functionality and the core functionality.